UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,726	10/01/2003	Richard D. Thornton	102320-0037	2945

21125 7590 07/14/2004

NUTTER MCCLENNEN & FISH LLP
WORLD TRADE CENTER WEST
155 SEAPORT BOULEVARD
BOSTON, MA 02210-2604

EXAMINER	
MULLINS, BURTON S	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/676,726	THORNTON ET AL.	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,5-8 and 10-13 is/are rejected.

7)☒ Claim(s) 4 and 9 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 23 February 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 23 February 2004 has been considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference characters. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: On p.3, line 4, the number of the patent referred to is not 6,860,300, but apparently 3,860,300, which was described on p.2, lines 22-25. Also, on lines 9-12, reference is made to Patent 3,937,148, which was previously described on p.2, lines 27-30. Further, there are no reference numerals in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Lamb (US 3,912,992). Lamb teaches a magnetic suspension system comprising: a guideway comprising one or more ferromagnetic rails 1 (Fig.3), at least one of which further comprises windings 8-14 for a linear synchronous motor; a vehicle or field member 15/16 comprising one or more arrays of superconducting magnets 5 (c.6, lines 16-18) at least one of which: effects magnetic attraction forces to at least one guideway rail (via flux field B, c.3, lines 33-37); effects lateral restoring forces on the vehicle (inherent); and effects longitudinal forces in response to electrical current in one or more of the windings (c.4, lines 20-22); a system effective to substantially stabilize a vertical gap H (c.3, lines 11-37; Figs.3&4).

Regarding claim 12, acceleration of the vehicle is controlled by the central control (c.5, lines 32-40).

6. Claims 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Okano et al. (US 6,418,857). Okano teaches a magnetic suspension system comprising: a guideway comprising one or more ferromagnetic rails 2 (Fig.2), at least one of which further comprises

windings 22 for a linear synchronous motor; a vehicle 1 comprising one or more arrays of superconducting magnets 14/15 at least one of which: effects magnetic attraction forces to at least one guideway rail 2; effects lateral restoring forces on the vehicle (c.7, line 9); and effects longitudinal forces in response to electrical current in one or more of the windings (c.6, lines 40-44); a system effective to substantially stabilize a vertical gap, to provide non-contact levitation (c.6, lines 14-20).

Regarding claim 13, the coils 14 comprise control coils wound around superconducting magnets 15 which effect a stable vertical gap. A first control system for controlling windings 22 is provided by an external control apparatus (c.6, lines 40-44). A second control system for driving motor windings 22 is taught at c.7, lines 15-19.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1-3, 5-8, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lamb (US 3,912,992) in view of Morishita et al. (US 4,972,779). Lamb teaches a magnetic suspension system comprising: a guideway comprising one or more ferromagnetic rails 1 (Fig.3), at least one of which further comprises windings 8-14 for a linear synchronous motor; a vehicle or field member 15/16 comprising one or more arrays of electro-magnets 5

(c.6, lines 15-18; Fig.3) at least one of which: effects magnetic attraction forces to at least one guideway rail (via flux field B, c.3, lines 33-37); effects lateral restoring forces on the vehicle (inherent); and effects longitudinal forces in response to electrical current in one or more of the windings (c.4, lines 20-22); at least one control coil 5 wound around the electromagnets effecting a substantially stable vertical gap H (c.3, lines 24-32).

Lamb differs in that the coils 5 forming the electromagnets on the vehicle/field member do not surround permanent magnets, per se, even though he does suggest permanent magnets or superconductors as a substitute (c.6, lines 15-18).

Morishita teaches a levitated transport system for a carrier 2 on ferromagnetic rails 4 including carrier magnetic floating assemblies 8 (Fig.1) comprising a magnet unit 10 that generates a force tending to cause the unit to be attracted to rail 4 (c.2, lines 61-63). The magnet unit 10 comprises control coils 20 wound around the magnet 16 and yokes 18 (Fig.4B). This hybrid structure in which permanent magnets 16 are used so that the carrier can float even when no energy is applied to the control coils 20, thus reducing power consumption when the carrier is not moving (c.5, lines 4-26).

It would have been obvious to modify Lamb's vehicle and provide permanent magnets per Morishita since this would have been desirable to reduce power consumption by enabling the vehicle to levitate even when the control coils were not energized.

Regarding claim 2, current in the control coils 5 on the vehicle is supplied by batteries or other means (c.6, lines 24-26).

Regarding claim 3, Lamb's control system for the winding groups 8-14 is shown in Fig.5.

Regarding claims 5 and 10, the wheels 18/19 in Lamb comprise one or more devices which would dampen roll or sway (c.3, line 63-c.4, line 5).

Regarding claims 6 and 8, this functional language is met by the combination of Lamb and Morishita.

Regarding claim 7, note position sensing means in Lamb comprising magnetic sensors S81-S—142 (c.4, lines 50-69).

Regarding claim 13, note that Lamb teaches that the electromagnets 5 may comprise superconductors (c.6, lines 15-18).

Allowable Subject Matter

9. Claims 4 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claims 4 and 9, the prior art does not teach at least one pair of magnets disposed in a lateral offset manner, to damp any of sway or yaw forces.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 571-272-2034. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
09 July 2004